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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/905,041

07/13/2001

Marc Madou

22727/04096

2217

24024 7590 05/11/2005

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EXAMINER

CHUNDURU, SURYAPRABHA

ART UNIT

PAPER NUMBER

1637

DATE MAILED: 05/11/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/905,041

Applicant(s)

MADOU ET AL.

Examiner

Suryaprabha Chunduru

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1637

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 March 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 41 and 60-62 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 41 and 60-62 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

1. Applicants' response to the office action filed on March 14, 2005 has been entered.

Status of the Application

2. Claims 1-40, 42-59 are cancelled. claims 41, 60-62 are pending. All amendments and arguments have been thoroughly reviewed and deemed unpersuasive. The following rejection under 35 USC 102(b) is reiterated. Response to Applicants' arguments follow. This action is Final.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 41, 60-63 are rejected under 35 U.S.C. 102(b) as being anticipated by Neri et al. (WO 97/40142).

Neri et al. teach a synthetic (see page 8, line 10-12) multimeric biopolymer (calmodulin binding peptide ligand) of claim 41, comprising plurality of monomeric units (peptide units) (see page 13, line 16- 25), wherein a plurality of said multimeric units in said biopolymer comprise a binding region for an analyte (page 13, line 16-25);

Wherein the monomeric units that comprise a binding region for analyte are covalently linked to each other (peptide bonds, reversible) (see page 13, line 16-25);

Wherein the monomeric units comprise a binding region for an analyte generates a signal (column page 12, line 23-37, page 13, line 1-7);

Wherein the signal generated by the monomeric units linked covalently with each other bound to an analyte is greater than the signal generated by the monomeric units that are linked noncovalently linked to each other and bound to an analyte (see page 13, line 35-37, page 14, line 1-16, wherein Fig. 1-3 show the sensograms and dissociation constants of peptides and their binding affinity towards calmodulin).

With regard to claim 41, Neri et al. disclose that the multimeric biopolymer comprises at least one calmodulin monomer or a dimer or multimer (see page 13, line 16-20);

With regard to claim 60, Neri et al. also disclose that the biopolymer changes its three-dimensional conformation in response to binding of a proton (Ca^{2+}) from the binding region (see page 6, line 36-38, page 7, line 1-9, page 10, line 29-38);

With regard to claim 61-62, Neri et al. disclose that the biopolymer comprises an enzyme that catalyzes a biochemical reaction, which results in formation of protons (active sites) upon binding and changes three-dimensional conformation (see page 9, line 8-22, line 27-37, page 10, line 35-38, page 6, line 36-38, page 7, line 1-9).

With regard to claim 63, Neri et al. disclose that the biopolymer, comprises 2 (dimer) or more monomeric units (see page 13, line 16-20).

Response to arguments:

With regard to the above rejection, Applicants' arguments and the amendment (incorporating claim 58-59 into claim 41) are fully reviewed and found unpersuasive. Applicants argue that examiner's incorrect interpretation of the disclosure of Neri et al. produces an untenable rejection. And argue that Neri et al. disclose a modified ligand for a calcium-dependent binding protein and synthesis of said ligands and argues that Neri et al. does not disclose calcium-

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dependent binding protein. Applicants' arguments and the amendment are fully considered and found unpersuasive. First, the instant claim 41 recites a synthetic multimeric biopolymer and recites its characteristics by reciting a "wherein" clause, thus the claim in its broader scope reads on any ligand for a calcium-dependent binding protein or calmodulin dimer and does not exclude a calcium binding protein ligand as a synthetic multimeric biopolymer. Second, the instant claim 41 is in "comprising" or open format and any additional components can be incorporated, thus the 'comprising' format does not exclude a synthetic ligand for a calcium dependent- binding protein as a synthetic multimeric biopolymer. In addition the claim recites that the biopolymer comprises plurality of monomeric units chosen from proteins that comprise a binding region for an analyte chosen from a sugar, protein, a peptide etc., thus the claim reads on any ligand-ligand complex (for example, in the instant context, a protein-protein complex). Further, the instant claim 41 does not recite that the claim excludes a ligand. Thus the limitation upon which the arguments are based, is *not* present in the claim.

Applicants also argue that Neri et al. teach peptide ligand dimer (LD) and their binding to two calcium dependent binding proteins,(CDBP) thereby creating a complex and argue that the interaction between CDBP and LD is one of protein-ligand affinity and not covalent bonding and argue that Neri et al. disclose multimeric biopolymer ligands comprising a binding region for an analyte. Applicants' arguments are fully considered and found unpersuasive, because the instant claims 41 recites monomeric units are linked by covalent bonding and the binding region binding to a ligand. Thus the arguments are irrelevant to the instant context because the monomeric units are peptides and the peptide bond (S-S) comprises

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covalent bonds. Thus covalent linking of monomeric units is inherent in the teaching of Neri et al. disclosure.

With regard to the applicants' arguments on page 5-6, the arguments are fully considered and found unpersuasive. Applicants argue that the examples 2-3 of Neri et al. teach different fluorescent labeled peptide ligands and their association and dissociation with calmodulin binding peptide interactions and argue that the ligand of Neri et al. and the peptide ligands bind to calmadulin can not be the same. And the complex CDBP-LD-CDBP does not comprise covalent bonding. Applicants arguments are fully considered and found not persuasive. The instant claim 41 recites plurality of monomeric units linked covalently to each other and the signal is dependent on the linked ligand and not on the interaction between CDBP with LD. The Examples 2-3 of Neri et al. together inherently teach that when a fluorescein-labeled peptide ligand binds to an analyte the signal generated by covalently linked monomers is greater than when the ligand does not bind to an analyte and it is clear from the example 2 and 3 of Neri et al. the signal varies between when the analyte is bond and when the analyte is unbound that the complex dissociation and association studies and not as argued by the applicants (the Examiner notes the signal variation between association of an analyte (example 2) and dissociation of an analyte (example 3) but not as argued by Applicants, that is, not on the change in signal within different modified ligands tested for association and dissociation separately). The broader scope of the claim 41 does not exclude the complex ligands as multimeric biopolymer and CDBP-LD as a calmodulin dimer. The claims 60-63 depend on claims 41 and meets the limitations in the disclosure of Neri et al. as discussed above. Accordingly the rejection is maintained.

Conclusion

No claims are allowable.

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Suryaprabha Chunduru whose telephone number is 571-272-0783. The examiner can normally be reached on 8.30A.M. - 4.30P.M , Mon - Friday,.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gary Benzion can be reached on 571-272-0782. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR

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system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Surya Prabha Chunduru
Examiner
Art Unit 1637


JEFFREY FREDMAN
PRIMARY EXAMINER

5/6/05